although this is difficult to prove. The cells and nuclei are found to be distinctly larger, as shown by measurements of nuclei of the pollen mother cells and of various other tissues. Drawings from transverse sections of the stems show clearly the larger size of the cells in the giant form. He concludes that "the character of giantness manifests itself in the cells themselves and not merely in the plant as a whole."

The reviewer has shown[38] that in *Oenothera gigas* the cells and nuclei are constantly larger than in *O. Lamarckiana*, but that the ratio of increase varies in different cases, the sizes being 1.5:1, 2:1, 3:1, or even more, though apparently constant for each tissue examined.—R. R. GATES.

Secondary growth in monocotyledons.—Evidence against the significance of histogenic layers in the stem apex continues to accumulate. SCHOUTE[39] dealt a severe blow to HANSTEIN'S theory when he showed that in Hippuris the plerome gives rise not only to the central cylinder but also to part of the cortex. As to vascular cryptogams, CAMPBELL[40] found that the vascular bundles of Equisetum originate from the cortical region. A monocotyledon has recently been studied by CARANO,[41] who finds that in the young stem and leaf of *Yucca aloifolia* it is impossible to distinguish between plerome and periblem. The author concludes that in this stem the existence of two distinct regions, central cylinder and primary cortex, is absolutely unfounded. It may be objected, however, that in this case there is merely negative evidence, which will not settle the question for the monocotyledons. In the stem of this plant there is nothing corresponding to the pericycle of the dicotyledons, and the meristematic zone which gives rise to the secondary tissues is continuous with the apical meristem. Hence this zone is considered to be primary at the outset, though the cambial activity later spreads outward to mature cells, when the meristem and its products of course become secondary. The permanently active layer so established produces vascular bundles and parenchyma internally, and parenchyma externally.—M. A. CHRYSLER.

Affinities of an alpine flora.—Following the glacial relic theory postulated by GRAY and elaborated by HOOKER and others, HARVEY[42] has studied the vascular flora of Mt. Ktaadn, Maine. Four distinct elements are distinguished: (1) the arctic-relic, (2) the pre-glacial alpine, (3) the endemic, and (4) the subalpine-lowland. Of these the last is regarded as not truly alpine, while the endemic flora consists of the single initial endemic *Carex Grahamii* and the relic endemic

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[39] SCHOUTE, J. C., Die stelär Theorie. Jena. 1903.

[40] CAMPBELL, D. H., Affinities of the genus Equisetum. Amer. Nat. **39**:273–285. 1905.

[41] CARANO, E., Su le formazioni secondarie nel caule delle Monocotiledoni. Annali di Botanica **8**:1–42. *pls. 1–4.* 1910.

[42] HARVEY, LEROY H., The floristic composition of the vascular flora of Mount Ktaadn, Maine. Mich. Acad. Sci. Report **11**:37–47. 1909.